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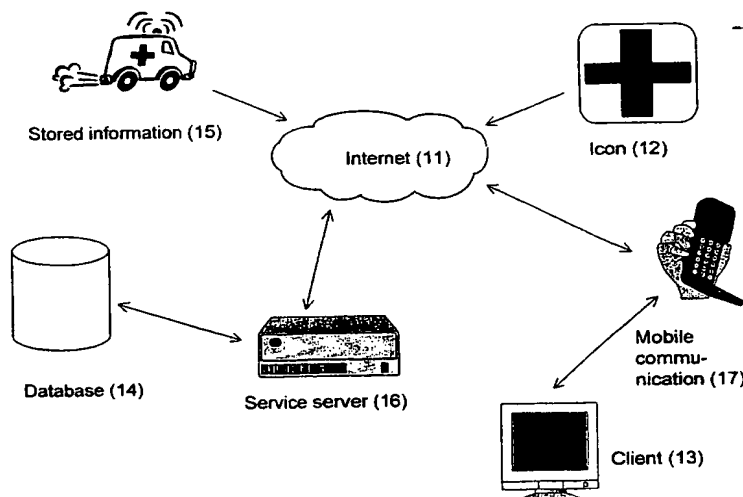
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ning of each regular issue of the PCT Gazette.

(54) Title: MOBILE INFORMATION SERVICE



(57) Abstract: The present invention relates to creating information objects relating to a geographical place. A first user at a mobile client (13) can make/place an indication, a footprint, related to a geographical position and store the indication by means of a service server (16), which is accessible on an open computer network, such as Internet (11). By the computer network also others have access to the footprint. The footprint indicates a place of interest and can be registered so that it can be seen only by the one who has made/placed it, by all within a certain group, or be entirely public. The information then can be shown to the same user, or others, on a map of one to a client equipment connected display unit, at which position of current interest (22) and icons (21, 23) appear on the map when the client equipment is moved. Associated with the icons there also is an address to further information that is accessible to be derived via computer network.

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MOBILE INFORMATION SERVICE**TECHNICAL FIELD**

5 The present invention relates to creating and storing information objects related to a geographical place. Position data and information objects are shown preferably on a map on a display unit at a mobile terminal.

10 A user of a mobile terminal can register and save an information object, a so called "footprint", for personal or public use related to the place where he/she is, or to another geographical position. The footprint is saved in the user's personal profile in the network, and/or in a
15 public part of the operator's information database. Depending on how the footprint is stored in the information database, is controlled which other users of the system that can see the footprint.

20 The footprint is bound to a geographical position and if the person who has made/placed it so decides, the footprint can, when it has been stored, also be seen by others. There also is a possibility to specify the one/those who shall be able to see it.

25 The information object, the footprint, also includes, in addition to geo-code for the geographical position, a formalised image, an icon, which shall symbolise the footprint at the showing/presentation.

30

PRIOR ART

 The technology of saving a bookmark for an address on Internet is well known. Any parallel to save a geographical
35 address, however, is not known.

It is well known to transmit address information via mobile communication. It is also known to communicate over an open computer network, usually Internet, by utilisation of the TCP/IP-protocol.

5

TECHNICAL PROBLEM

The person being on a place may want to make an indication and a memorandum relating to the place. The memorandum can be a note to make it possible to find one's way back to the same place on a later occasion. It can in that way be intended as an own memorandum, or for a wider group, for instance the closest circle of friends about a phenomenon one wants to show, or perhaps a guide to a meeting.

15

A public indication may need to be distributed by private persons, organisations, or public authorities. Examples can be to distribute a warning about an occurred accident, or information about parking places at an arrangement.

20

An organisation may need to distribute information about where the activity is located; it may be advertisement for a recently opened shop, or a temporary arrangement.

25

TECHNICAL SOLUTION

When the user wants to make/place a footprint, this is done by means of the client software in the terminal. The user informs the client software about which category the footprint belongs to, which the status the footprint has (personal, group, or public), "best-before" date, and other text note or icon that shall be associated with the object.

35

The client is equipped with a display unit and with possibility to communication with the service server, and is arranged for positioning/position indication, which is easiest arranged by a positioning system, such as GPS.

5

The user registers and saves a so called "foot-print" for personal or public use. The footprint is saved in the user's personal profile, which usually is stored at a service provider, or in a public operator's information database. Depending on how the footprint is stored in the information database, is controlled which other users of the system that can see the footprint. The geographical location of the footprint is decided by a positioning system that is connected to the client, or by manual input. In the footprint are also registered other information that is relevant, such as the group that shall have possibility to see the footprint.

The conception of footprint can nearest be compared to the conception of "bookmark", which is used in i.a. web browsers to indicate a network address to which the user wants to return. Footprints differ from bookmarks primarily by being associated with geographical positions and by being visible to others than the one who has made/placed the footprint.

By the footprints being stored and handled by an operator, and by, via the operator's server, being accessible in an open computer network, they are accessible from any client connected to the system. Restriction of the access will be handled by the operator, who controls the storing of the footprints and access rights for registered users. By that, the footprint can be made visible to single users, to groups of users, or to everybody.

35

A technical embodiment of a system that utilises the invention includes terminal/client (13), a service server (16) with storing possibility (14), an open computer network such as Internet. The terminal includes data
5 communication functions and display unit.

ADVANTAGES

10 Footprints, which indicate a geographical place/position, can be created and made visible via an operator in a universally accessible computer network. The footprint can easily be made/placed by the one who is registered user at an operator who provides the service.
15 The footprint is saved in the user's personal profile in the network, or in a public part of the operator's information database. Depending on where the footprint is stored in the information database, is controlled which other users of the system that can see the footprint.
20 Private footprints, which are only shown to the user who has made/placed the footprint, are stored in the user's profile in the network, by which the user always has access to the footprint, irrespective of which client equipment he/she is utilising.

25 The footprint can be made/placed any time and belonging geographical data (positioning information) can be registered automatically by to the client connected positioning system, or by manual input by the user.

30 Footprints can be made/placed as an icon that can be clicked on, to make it possible to derive further information about the footprint via an address in the open computer network.

35

The footprint can be given a limited service length, which is important if the footprint is of interest only during a limited period of time. The footprint can also be arranged so that that it is made/placed at a certain point of time in the future.

By the person making/placing a footprint normally being information owner of the shown information, and also himself/herself managing the vital (delicate) information, the security issues will be easy to handle. No secret information need to be handled by a service provider, and the information owner himself/herself attends to the correctness.

A solution according to the invention is technically easy to handle since:

- only standard components are needed for the user equipment: Simple computer and access possibility to an open computer network such as Internet, for instance, via wire-connected telephone, or mobile telephone, such as GSM.
- the service is easy to use - load a program and the service is accessible.
- included units communicate via an open communications network, such as Internet, by a universally accessible protocol, such as TCP/IP, which makes it easy to distribute the system.
- the utilisation of an open computer network makes it easy to rescale the system for more or fewer users, and to extend the system with different geographical districts as market and needs are changing.

- operation, maintenance and further development of the service is facilitated by updating/upgrading and other changes only being needed to perform in one place.

5 LIST OF FIGURES

Figure 1 shows a technical embodiment of a system that utilises the invention.

10 Figure 2 shows how map with footprints is shown to the user.

EXPLANATION OF TERMS

15 Auto-active icon Icon that is so arranged that the client automatically derives the to the icon associated information when certain criteria have been fulfilled, for instance that the client is coming within a certain distance from the
20 object.

Bookmark An indication in a web crawler for a stored web address, which makes it
25 possible to quickly and in a simple way return to a page on Internet.

Footprint Information object that is handled by a service provider, and which can be
30 made/placed by a registered user. The footprint is bound to a geographical position and can be seen via an open computer network.

35 Geo-code Geographical coordinates for an object.

GPS	Global Positioning System
GSM	Global System for Mobile Communication
5	Cellular mobile telephone system.
HTTP	Hyper Text Transfer Protocol.
	Program language on Internet. The
10	protocol constitutes a base for
	transmission of documents.
Information object	Object to which is associated
	information that is handled in an
15	information database.
IP	Internet Protocol
	Protocol that is used in Internet.
TCP	Transmission Communication Protocol
20	
Web address	Address on Internet.

DETAILED DESCRIPTION

25

The description below refers to the figures in the enclosed drawings.

Preferred embodiment

30

A user at a mobile client (13) can make/place an indication, a footprint, which indicates a geographical position. The indication, consisting of an information object, is related to a geographical position, the client's
35 present geographical position, or other entered, position, and is handled by a service server (16), which is operated

by a service provider or operator. To make the service server accessible, it is placed in connection to an open computer network, such as Internet (11), to which the user has access, by the client having a dynamic connection, for instance via a mobile telephone (17). By the computer network, also others have access to the footprint, if it has been registered to be accessible by others.

To make/place a footprint, the user utilises the client software to indicate which status the footprint shall have (personal, group or public), for how long time the footprint shall exist and be accessible for showing, as well as other information. To the indication can be associated a symbol, for instance an icon (12), which can be shown on a display unit and indicate the place of the footprint. The icon also shows the type of footprint (for instance the identity of the one who has made/placed the footprint, or indicating a warning) and constitutes a link to further information (15) about the footprint. The information, which is stored together with the footprint, then includes an address, for instance a web address on Internet, which refers to a place where the information relating to the footprint is accessible. In that way the icon can constitute a cursor for a pointer; for instance if Internet is utilised, the icons can be possible to click on and refer to a web page. The content of the web page then is placed/entered in connection with that the footprint is created, if it has not been stored before, and can be derived by ordinary HTTP-protocol.

30

The footprint can be used to indicate a place of interest. The interest can be of personal nature (for instance a good restaurant, a nice service area). The registration thus can be personal, i.e. only the one who has made/placed the footprint can see it when he/she is coming into the district. The alternatives are to allow a

35

whole group, i.e. that all within a certain group of users see the object, or to allow the footprint to be public, i.e. everybody who is coming into the district can see the object. The operator has possibility to moderate the database with public footprints, for instance only allow a certain service length, or that private persons only are allowed to make/place a certain type of footprints that are of public interest, for instance warnings about accidents, game warning, etc.

In order to limit the need of storing and transmission, the icon, which is associated with the footprint, does not need to be handled; instead an address to a storing place in a computer network is handled, for instance a web address to a place on Internet, where the icon (12) is accessible. The icons therefore can be located anywhere on an accessible computer network, and can be owned by anybody (for instance a company, a public authority, or a private person). Together with the footprint there also is an address to information relating to the footprint. If the information shall be derived from Internet, this address information is a web address where an interested party has stored information relating to the footprint.

Status is specified for the footprint in order to identify to whom it shall be made visible:

- Only to the one who has made/placed the footprint
- One in advance defined group of registered users who have access to the operator's service
- A group defined in connection with making/placing of the footprint

- All registered users who have access to the operator's service
- All who have access to the open computer network.

5

A user who wants to know the content of the information a footprint provides, shall have access to client equipment with display unit and access to suitable computer network, for instance Internet, and have access to the service provider's footprint service. The presentation/showing is suitably made together with showing of map and preferably by utilisation of a positioning system, for instance GPS, if the map image is intended to comprise the user's existing position. The position can also be entered manually, which can be utilised if the map image relates to another position than the client's existing location.

10

15

On the map image (20) is shown, together with icons (21) that apply to the map, also the icons for all footprints (23), which have been made/placed and to which the user has access, i.e. the user belongs to the group to whom the footprint shall be shown. By clicking on an icon, the user also will have access to the information that has been stored together with the icon. If the icon is registered as an auto-active icon, the stored information will be shown as soon as the client (22) is coming within a certain, least distance of the geo-coded position of the icon.

20

25

30

The nature of the footprint

The nature of the footprint is identified by the stored information about the footprint:

35

- The geo-code of the footprint

- The person/persons who shall be able to see the footprint
- Point of time when the footprint shall be made accessible
- The length of service of the footprint
- Which icon that shall be shown
- Web address for further information
- The person who has made/placed the footprint

If the footprint is made/placed as an auto-active icon, i.e. the client is under certain criteria initiated to derive information on a computer network, the information is shown automatically on the client's display unit when the criteria in question are fulfilled. Thus, if the criterion is that the client's distance to the footprint is less than a certain, specified value, information will be shown on the display unit to the one who is approaching the place where the footprint is stored.

The icon shows which type of object the footprint relates to. Different types of footprints that can be evident from the icon can be: Game warning, traffic accident, traffic information, place of meeting, restaurant, personal indication etc.

Examples of characteristics stored at the footprint

- Identity of the one who has made/placed the footprint
- The place where the footprint has been made/placed

- Accuracy or spreading of the footprint
- Point of time when the footprint shall be/has been made/placed
- 5 • Duration, or length of service, of the footprint
- The person/persons that shall be able to see the footprint
- 10 • Object that the footprint relates to
- Text, picture, video or sound sequence
- 15 • Icon
- Address on the open computer network where further information can be derived.

20 Showing on map

The information is suitably shown on a map on the client's display unit, at which existing position (22) and icons (21,23) appear on the map as the user is moving. See
25 Figure 2.

Associated with the icons there is also the address to the information that is accessible to be derived via the computer network. At utilisation of, for instance,
30 Internet, the user can click on the icon, at which the associated web address is utilised to, by means of the HTTP-protocol, derive the stored information. At auto-active icons, the stored information can be shown automatically when the user is approaching the place of the
35 geo-code of the icon.

The information the client has requested for a certain district is geographically coded. The client utilises this to, on the map, make/place icons. The icon itself need not be transmitted to the client, but only an address to a storing place on the computer network. The icons are after that derived from the network by the client. By this procedure, the service provider only need to handle the coordinates and an address.

10 If information is derived via Internet, the pointer is a web address and the icon can be derived by the HTTP-protocol.

The geo-coded pointer also includes an indication that indicates which type of object the icon represents (game warning, traffic accident, traffic information, meeting place, restaurant, personal indication, etc). If the client experiences that it will take too long time to derive the icon from the network, a default icon can be used, which can be locally stored in the client, for the category in question.

Client application

25 The user who makes/places the footprint utilises a terminal (client computer, for instance and ordinary, portable computer), which suitably is equipped with functionality for positioning (for instance GPS) and access to Internet, for instance via a telephone, preferably mobile telephone, for instance GSM.

The user can manage parts of his/her personal profile directly via the client application. It is then transmitted and stored in the service logic. The advantage of storing the personal profile in the network instead of storing it locally, is that the user can utilise just any mobile

terminal with the client program installed and yet have access to his/her personal profile.

Examples of application

5

A public authority can make/place footprints related to road conditions, game warning, or other traffic warnings. Such a footprint can be made/placed at a fork in the road, so that the traffic will have a possibility to
10 select an alternative route. The footprint also can be made/placed as a warning in the neighbourhood of the place in question.

Also private persons can be given the opportunity to
15 make/place warnings about occurred traffic accidents and about game in the neighbourhood of the road.

In connection with accidents, a footprint can be a
simple way to guide rescue service or other emergency
20 staff, such as mountain rescue service, to right place.

Footprints that can be shown selectively to individuals, or groups of people, provide a chance to, in an efficient way, distribute local and time-bound
25 information is association with meetings and other larger or smaller arrangements.

A person arriving at a cloudberry bog can make/place a memorandum for next year.
30

The person perhaps also wants to tell his/her friends where the cloudberry bog is located. When some of the friends then are walking in the neighbourhood of the bog, he/she will have a signal about that he/she now is close to
35 a good cloudberry bog. Alternatively he/she can utilise the computer network to search for good cloudberry bogs and

then will find the footprint made/placed by the first person.

Footprints can be made/placed to give the friends tips
5 about nice restaurants. The footprint can also be used as a guide to show the friends the route to a common meeting.

At going the rounds, or at orienteering race events, footprints can be used instead of conventional stamping to
10 indicate that the guard, respective orienteer, has been on a certain place.

There are adventure games for computers aimed at solving problems in a world of the make-believe. The game
15 often includes that the player brings items that are found in different places. It may also be that the player has to hand over things to other players. By utilisation of footprints the objects that are included in the game can be in the information database for the game. A player who is
20 moving into an area, can pick up objects, which are then "checked out" from the database. When the player leaves an object, the object and its position is registered in the game database. By this technology it will be possible to play adventure games with virtual objects in a real world.
25

A tourist guide can be built up by footprints. As the tourist is moving, things worth seeing, shops and other information, are shown. The footprint technology can at that be a vigorous support for tourists and others who want
30 information about things worth seeing. In the same way also showing at a museum or at an exhibition can be supplemented with information controlled by the visitor's interest.

ALTERNATIVE EMBODIMENTS

Dynamic footprints

5 By automatic making/placing of footprints it will be possible to find out how a person has moved. By a certain interval a footprint is made/placed, which is remaining for a certain period of time. This provides opportunity to trace how the person has moved, for instance:

10

- Children at festival, department store, festival location etc
- Electronic tagging, where a punishment is to limit a
15 person's freedom of movement
- At a festival location, or other arrangement, to know where one's fellows are
- 20 • To trace movement of marked, wild animals
- A single-handed yachtsman showing his/her route

25 Computer network and positioning

The different parts in the user environment are exchangeable. The user's equipment and utilised programs and systems are adapted to the environment and
30 infrastructure that is utilised. At that can, for instance, other computer networks than Internet be utilised, and several different ways to handle the user's position are possible, such as other positioning systems, or manual position registration.

35

The invention is not limited to the above described embodiments, but can in addition be subject to modifications within the frame of the following patent claims and the idea of invention.

PATENT CLAIMS

1. A method, at a first display unit connected to a first client equipment (13) to register information objects, which are related to a geographical position, to store said information objects and to keep said information objects accessible to showing/presentation via said first display unit connected to said first client equipment or a second display unit connected to a second client equipment, c h a r a c t e r i s e d in that information about said geographical position is provided and registered together with said information object via said first display unit.
2. A method as claimed in patent claim 1; c h a r a c t e r i s e d in that said first client equipment communicates by mobile or fixed telecommunication (17) with a service server (16), which is operated by a service provider, that said information objects are stored in said service server from which said information objects are kept accessible to said showing/presentation, and that said first or said second client equipment has access to said information objects via mobile or fixed telecommunication.
3. A method as claimed in any of the previous patent claims, c h a r a c t e r i s e d in that, at said registration of information objects, said geographical position is appointed on a map on the client's display unit.
4. A method as claimed in any of the previous patent claims, c h a r a c t e r i s e d in

- that said information object is shown as an icon (12, 23) together with an arrangement that shows a map on the client's display unit,
 - 5 • that, together with said information object, information is stored about which icon that shall be shown, and either address to storing place for said icon, or the icon itself as an image object, and
 - 10 • that further information (15) about the information object is shown when said icon is indicated, for instance by clicking by means of pointer connected to the client equipment, or if
 - 15 the icon is an auto-active icon, when certain conditions are fulfilled, for instance that the client's position is within a certain distance from said geographical position.
- 20 5. A method as claimed in any of the previous patent claims, c h a r a c t e r i s e d in that communication between said client equipment and said service server is executed by means of a universally accessible protocol, for instance the TCP/IP-protocol,
- 25 over a computer network, for instance Internet (11).
6. A method as claimed in patent claim 5, c h a r a c t e r i s e d in that, together with said information object, an address is stored that
- 30 indicates a place in said computer network where information related to the information object is accessible.
7. A method as claimed in any of the patent claims 5 to
- 35 6, c h a r a c t e r i s e d in that said information

objects can be made accessible to different groups of users, for instance:

- only to person who has made/placed information object,
- only from the client equipment at which the information object has been made/placed,
- a certain group of identified users of client equipment, or
- all client equipment that can communicate over said computer network.

8. A method as claimed in any of the previous patent claims, characterised in that said geographical position can be provided to the information object at registration by manual input/entering, or by a positioning system, for instance GPS, which registers the client's position.

9. A method as claimed in any of the previous patent claims, characterised in that said information object is stored in the personal profile that belongs to the one who has registered the information object.

10. A method as claimed in any of the patent claims 2 to 9, characterised in that said information object is stored in said public service provider's information database.

11. A method as claimed in any of the previous patent claims, characterised in that, at registration of said information object, start time

and closing time, or service length, relating to time of accessibility of the showing/presentation of the information object, are defined.

- 5 12. A method as claimed in any of the previous patent claims, c h a r a c t e r i s e d in that one or more of the following items are registered together with the information object:
- 10 • the person/persons who shall be able to see the information object
- point of time when the information object shall be made accessible
- 15 • the length of service of the information object
- the person who has made/placed the information object
- 20 • text, picture, video or sound sequence that is connected with the information object.

1/2

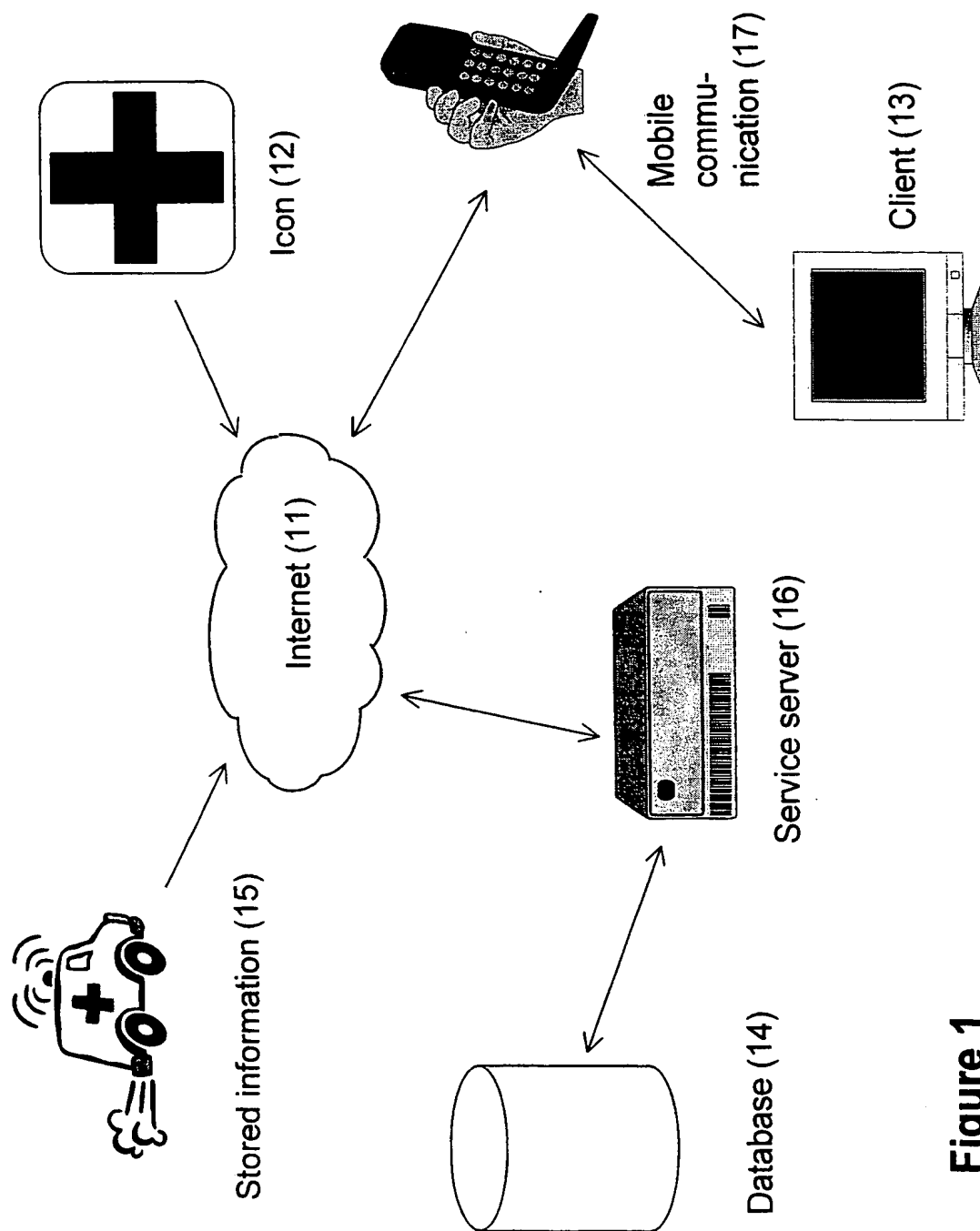


Figure 1

2/2

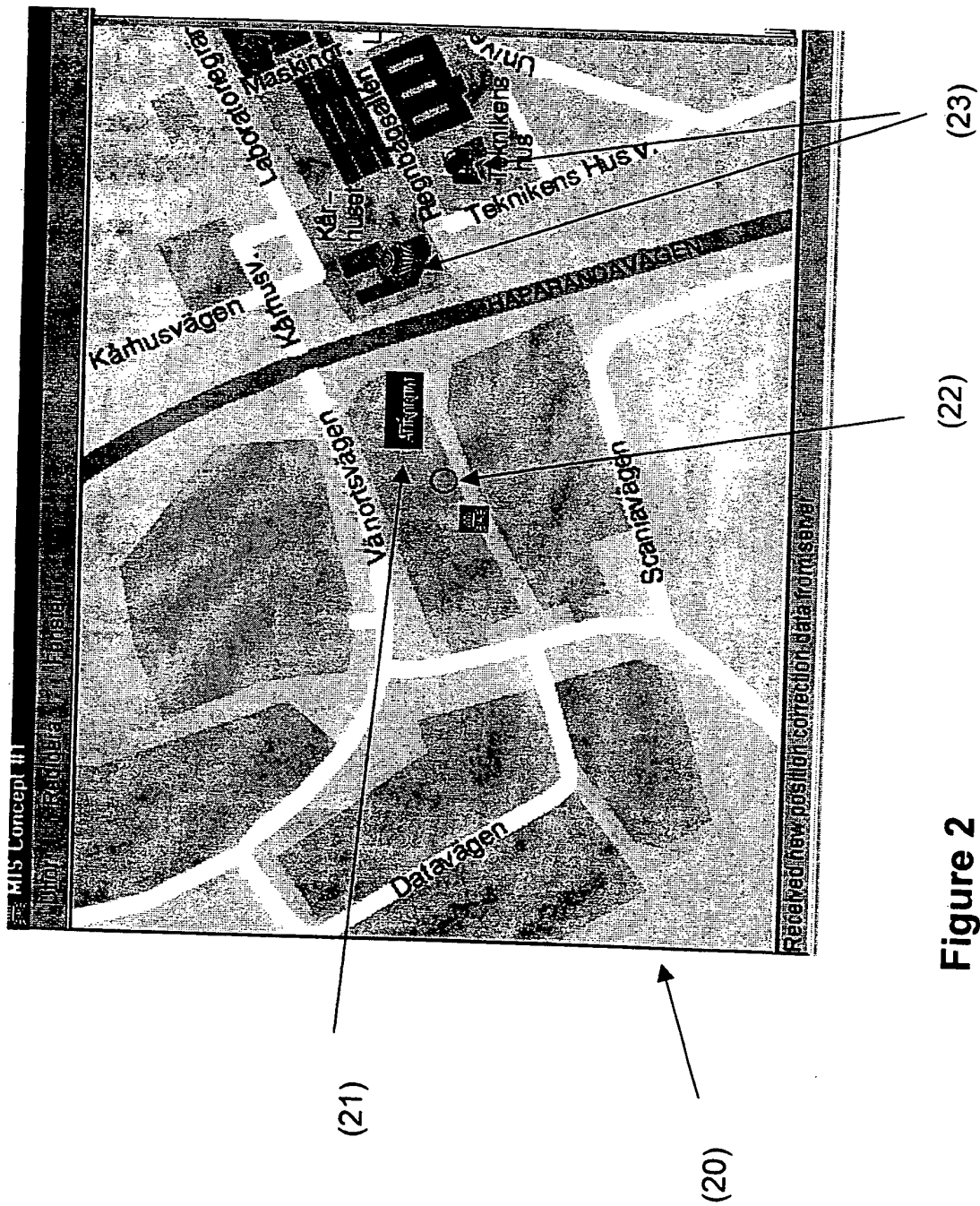


Figure 2

INTERNATIONAL SEARCH REPORT

International application No.

PCT/SE 00/01342

A. CLASSIFICATION OF SUBJECT MATTER

IPC7: G06F 17/30, G06F 19/00

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: G06F

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

SE,DK,FI,NO classes as above

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	US 5699244 A (MONSANTO COMPANY), 16 December 1997 (16.12.97), column 1, line 48 - line 49; column 2, line 6 - line 15; column 9, line 5 - line 21, column 14, line 7 - line 10, figures 57 - 59, claim 17	1-4,7-12
Y	abstract	5
	--	
X	US 5214757 A (GEORESEARCH, INC.), 25 May 1993 (25.05.93), column 3, line 9 - line 19; column 12, line 47 - line 51; column 16, line 5 - line 7, figure 1, abstract	1-4,6,8-12
Y	abstract	5
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☒ Further documents are listed in the continuation of Box C.☒ See patent family annex.

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"I" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

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"Y" document of particular relevance: the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art

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Date of the actual completion of the international search

28 Sept 2000

Date of mailing of the international search report

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INTERNATIONAL SEARCH REPORT

International application No.
PCT/SE 00/01342

C (Continuation). DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
Y	US 5646629 A (TRIMBLE NAVIGATION LIMITED), 8 July 1997 (08.07.97), column 1, line 60 - column 2, line 9; column 14, line 33 - line 43, abstract -- -----	5

INTERNATIONAL SEARCH REPORT
Information on patent family members

01/08/00

International application No.

PCT/SE 00/01342

Patent document cited in search report			Publication date	Patent family member(s)		Publication date
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